

AMENDMENTS TO THE CLAIMS

The following is a complete listing of all the claims submitted in this application, including their present status and any current amendments. By this paper, claims 27, 28 and 36 have been amended, claims 34-35 have been canceled and new claims 37-42 presented.

LISTING OF CLAIMS

1-21(canceled).

22(previously presented). A plasticizer as in claim 36 comprising a citrate.

23(previously presented). A plasticizer as in claim 22 wherein the citrate is acetyltriethyl citrate.

24(previously presented). A plasticizer as in claim 22 wherein the citrate is acetyltri-n-butyl citrate.

25(previously presented). A plasticizer as in claim 36 comprising an adipate.

26(previously presented). A plasticizer as in claim 25 wherein the adipate is diisobutyl adipate.

27(currently amended). A single base propellant free of high energy plasticizers comprising by weight:

- (a) from about 93 to about 97% high nitrogen nitrocellulose
consisting nitrocellulose having an average N content
of $\geq 13.15\%$ N;

- (b) from about 2-5% of a non-energetic plasticizer as defined in claim 36 consisting of material selected from acetyltriethyl citrate, acetyltri-n-butyl citrate, triethyl citrate, tributyl citrate, diisobutyl adipate, diisooctyl adipate and mixtures thereof; and
- (c) about 2% dibutylphthalate.

28(currently amended). A dinitrotoluene and dibutyl phthalate-free, single base propellant as in claim 37 comprising by weight:

- (a) from about 88% to about 90% high nitrogen ~~(about 13.2%N)~~ nitrocellulose consisting of nitrocellulose having an average N content $\geq 13.15\%$ N; and
- (b) from about 4% to about 10% of a non-energetic citrate plasticizer selected from acetyltriethyl citrate, acetyltri-n-butyl citrate, triethyl citrate, tributyl citrate and mixtures thereof; and
- (c) about 1% of ethyl centralite.

29(previously presented). A propellant as in claim 28 further comprising about 1% by weight ethyl centralite.

30(previously presented). A propellant as in claim 28 further comprising up to about 1% by weight of K_2SO_4 or KNO_3 .

31(previously presented). A propellant as in claim 29 further comprising up to about 1% by weight of K_2SO_4 or KNO_3 .

32(previously presented). A propellant as in claim 28 wherein the citrate is acetyltriethyl citrate.

33(previously presented). A propellant as in claim 28 wherein the non-energetic plasticizer is present in an amount of about 10% by weight and the nitrocellulose is present in an amount of about 88% by weight.

34-35(canceled).

36(currently amended). ~~An efficient~~ A non-energetic plasticizer suitable for plasticizing high nitrogen nitrocellulose ~~(about 13.2%N)~~ wherein said nitrocellulose has an average N content $\geq 13.15\%N$ in a dinitrotoluene-free single based base propellant formulation, which is suitable for use as a projectile-firing propellant, said plasticizer consisting of material selected from acetyltriethyl citrate, acetyltri-n-butyl citrate, triethyl citrate, tributyl citrate, diisobutyl adipate, diisooctyl adipate and mixtures thereof, wherein ~~the efficiency~~ of said non-energetic plasticizer enables substitution of a ~~smaller amount of~~ non-energetic plasticizer for all high energetic plasticizers, including dinitrotoluene normally included in projectile-firing single base propellants, while maintaining a desired level of mechanical properties in the propellant formulation.

37(new). A single base propellant free of high energy plasticizers comprising by weight:

- (a) a major nitrocellulose fraction wherein the nitrocellulose fraction consists of nitrocellulose having an average N content $\geq 13.15\% N$;

(b) a minor fraction of a plasticizer wherein the plasticizer comprises material selected from citrate and adipate compounds and combinations thereof selected from the group consisting of acetyltriethyl citrate, acetyltri-n-butyl citrate, triethyl citrate, tributyl citrate, diisobutyl adipate, diisooctyl adipate and mixtures thereof; and

(c) an amount of a stabilizer compound.

38(new). A single base propellant as in claim 37 wherein said plasticizer consists of material selected from citrate and adipate compounds and combinations thereof selected from the group consisting of acetyltriethyl citrate, acetyltri-n-butyl citrate, triethyl citrate, tributyl citrate, diisobutyl adipate, diisooctyl adipate.

39(new). A single base propellant as in claim 38 wherein said plasticizer contains a major fraction of acetyltriethyl citrate.

40(new). A single base propellant as in claim 38 wherein said stabilizer includes ethyl centralite.

41(new). A single base propellant as in claim 40 wherein said plasticizer contains a major fraction of acetyltriethyl citrate.

42(new). A method of solublizing and plasticizing high nitrogen nitrocellulose having an average N content $\geq 13.15\%$ N comprising the step of combining said nitrocellulose with a minor

amount of a plasticizer consisting of material selected from citrate and adipate compounds and combinations thereof selected from the group consisting of acetyltriethyl citrate, acetyltri-n-butyl citrate, triethyl citrate, tributyl citrate, diisobutyl adipate, diisooctyl adipate and mixtures thereof and an amount of acetone.